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TRANSACTIONS

OF THE

KANSAS ACADEMY OF SCIENCE.

VOL. XX, PART II.

CONTAINS

LIST OF OFFICERS, PAST AND PRESENT; MEMBERSHIP LIST JANUARY 1, 1907; SKETCH OF THE ACADEMY; CONSTITUTION AND BY-LAWS; MINUTES OF THIRTY-NINTH ANNUAL MEETING; PRESIDENT'S ADDRESS, AND SOME PAPERS READ.

DECEMBER, 1906.

STATE PRINTING OFFICE,
TOPEKA, 1907.
2826

TRANSACTIONS

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KANSAS

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OFFICERS OF THE ACADEMY, 1907.

President.....J. A. YATES.....Ottawa.
Vice-president.....E. HAWORTH.....Lawrence.
Vice-president.....F. B. DAINS.....Topeka.
Treasurer.....ALVA J. SMITH .....Emporia.
Secretary.....J. T. LOVEWELL .....Topeka.

Past Officers of the Academy.

PRESIDENTS.

1869, '70.... B. F. Mudge.
1871-'73.... John Fraser.
1874-'78.... F. H. Snow.
1879, '80.... B. F. Mudge.
1881, '82.... J. T. Lovewell.
1883..... A. H. Thompson.
1884, '85.... R. J. Brown.
1886..... E. L. Nichols.
1887..... J. D. Parker.
1888..... J. R. Mead.
1899..... T. H. Dinsmore, jr.
1890..... G. H. Failyer.
1891..... Robert Hay.
1892..... E. A. Popenoe.
1893..... E. H. S. Bailey.
1894..... L. E. Sayre.
1895..... Warren Knaus.
1896..... D. S. Kelly.
1897..... S. W. Williston.
1898..... D. E. Lantz,
1899..... E. B. Knerr.
1900..... A. S. Hitchrock.
1901..... E. Miller.
1902..... J. T. Willard.
1903..... J. C. Cooper.
1904..... Edward Bartow.
1905..... L. C. Wooster.
1906..... F. O. Marvin.

VICE-PRESIDENTS.

1869, '70.... J. S. Whitman.
1871..... B. F. Mudge.
1872, '73.... B. F. Mudge, Dr. R. J. Brown.
1874..... J. A. Banfield, J. D. Parker,
1875..... B. F. Mudge, J. D. Parker.
1876, '77.... B. F. Mudge.
1878..... B. F. Mudge, J. H. Carruth.
1879-'82.... J. H. Carruth, Joseph Savage.
1883..... J. R. Mead, G. E. Patrick.
1884..... F. H. Snow, Joseph Savage.
1885..... E. L. Nichols, G. H. Failyer.
1886..... J. D. Parker, N. S. Goss.
1887..... J. R. Mead, E. H. S. Bailey.
1888..... E. H. S. Bailey, T. H. Dinsmore, jr.
1889..... E. H. S. Bailey, G. H. Failyer.
1890..... D. S. Kelly, F. W. Cragin.
1891..... F. W. Cragin, O. C. Charlton.
1892..... F. O. Marvin, Mrs. N. S. Kedzie.
1893..... J. T. Willard, E. B. Knerr.
1894..... I. D. Graham, J. D. Hewitt.
1895..... I. D. Graham, S. W. Williston.
1896..... S. W. Williston, D. E. Lantz.
1896..... D. E. Lantz, A. S. Hitchcock.
1898..... C. S. Parmenter, L. C. Wooster.
1899..... A. S. Hitchcock, J. R. Mead.
1900..... E. Miller, J. C. Cooper.
1901..... J. C. Cooper, L. C. Wooster.
1902..... Edward Bartow, J. A. Yates.
1903..... Edward Bartow, J. A. Yates.
1904..... L. C. Wooster, B. F. Eyer.
1905..... F. W. Bushong, W. A. Harshbarger.
1906..... B. F. Eyer, J. E. Welin.

SECRETARIES.

1869-'73.... J. D. Parker,
1874, '75.... John Wherrell.
1876, '77.... Joseph Savage.
1878-'89.... E. A. Popenoe.
1890-'92.... E. H. S. Bailey.
1893..... A. M. Collette.
1894-'98.... E. B. Knerr.
1899-1901... D. E. Lantz.
1902-'04.... G. P. Grimsley.
1905, '06.... J. T. Lovewell.

TREASURERS.

1869-'73.... F. H. Snow.
1873-'75.... R. J. Brown.
1876, '77.... W. K. Kedzie.
1878-'83.... R. J. Brown.
1884, '85.... A. H. Thompson.
1886-'90.... I. D. Graham.
1891..... F. O. Marvin.
1892-'95.... D. S. Kelly.
1896..... L. E. Sayre.
1897-1900... J. W. Beede.
1901, '02.... E. C. Franklin,
1903-'06.... Alva J. Smith.

MEMBERSHIP OF THE ACADEMY,

January 1, 1907.

Dates in the following list signify date of election to membership in the Academy.

HONORARY MEMBERS.

G. P. Grimsley, Ph. D., 1904, asst. state geologist... Morgantown, W. Va.
Rev. Johns D. Parker, Ph. D., 1897..... New Haven, Conn.
Arnold B. Johnson, 1897, U. S. Lighthouse Board.... Washington, D. C.
W. A. Kellerman, Ph. D., 1897, Ohio State Univ..... Columbus, Ohio.
Edw. L. Nichols, Ph. D., 1897, Cornell Univ..... Ithaca, N. Y.
W. S. Franklin, Sc. D., 1897, Lehigh Univ..... South Bethlehem, Pa.
Geo. Wagner, Phar. D., 1904, Univ. of Wisconsin.... Madison, Wis.
S. W. Williston, Ph. D., 1902, Univ. of Chicago..... Chicago, Ill.

ASSOCIATE MEMBERS.

Mrs. R. J. Brown, 1903..... Leavenworth.
Mrs. Mary Savage, 1897..... Lawrence.

LIFE MEMBERS.

E. H. S. Bailey, Ph. D., 1883, Univ. of Kansas..... Lawrence.
J. C. Cooper, 1877, mineralogist..... Topeka.
F. W. Cragin, Ph. D., 1880..... Colorado Springs.
L. L. Dyche, M. S., 1881, Univ. of Kansas..... Lawrence.
Geo. H. Failyer, Ph. D., 1879, Dept. of Agr..... Washington, D. C.
E. C. Franklin, Ph. D., 1884, Stanford Univ..... Stanford Univ., Cal.
I. D. Graham, 1879, with *Kansas Farmer*..... Topeka.
Erasmus Haworth, Ph. D., 1882, Univ. of Kansas.... Lawrence.
Warren Knaus, M. S., 1884, editor..... McPherson.
D. E. Lantz, M. S., 1887, Biological Surv..... Washington, D. C.
J. T. Lovewell, Ph. D., 1878..... Topeka.
F. O. Marvin, C. E., 1884, Univ. of Kansas..... Lawrence.
J. R. Mead, 1879..... Wichita.
Ephraim Miller, Ph. D., 1873, Univ. of Kansas..... Lawrence.
E. A. Popenoe, A. M., 1872, Kansas Agr. Coll..... Manhattan.
L. E. Sayre, Ph. M., 1885, Univ. of Kansas..... Lawrence.
Alva J. Smith, 1903, county surveyor..... Emporia.
B. B. Smyth, 1880, curator Goss ornith. coll..... Topeka.
F. H. Snow, Ph. D., 1868, Univ. of Kansas..... Lawrence.
A. H. Thompson, D. D. S., 1873..... Topeka.
M. L. Ward, D. D., 1880, Ottawa Univ..... Ottawa.
J. T. Willard, M. S., 1883, Kansas Agr. Coll..... Manhattan.
S. W. Williston, Ph. D., 1880, Univ. of Chicago..... Chicago, Ill.

ANNUAL MEMBERS.

L. O. Adams, 1903, Univ. of Kansas ..... Lawrence.
Orr Adams, 1898 ..... Tulluride, Colo.
Frank G. Agrelius, 1905 ..... Lawrence.
Wm. Aitkinhead, 1906, Washburn Coll ..... Topeka.
H. C. Allen, 1904 ..... McPherson.
Carroll D. Armstrong, M. D., 1905 ..... Salina.
John J. Arthur, 1904 ..... Topeka.
C. H. Ashton, 1903, Univ. of Kansas ..... Lawrence.
Alfred W. Ayers, 1904, minister ..... Onaga.
W. M. Bailey, 1906, teacher ..... Holton.
Harvey W. Baker, 1902, Kansas Agr. Coll ..... Manhattan.
Elam Bartholemew, M. S., 1905 ..... Stockton.
Edward Bartow, Ph. D., 1897, State Water Surv..... Urbana, Ill.
W. J. Baumgartner, M. D., 1904, Univ. of Kansas... Lawrence.
Frank G. Bedell, 1904 ..... Iola.
J. W. Beede, Ph. D., 1894, Univ. of Indiana ..... Bloomington, Ind.
F. W. Bushong, B. S., Univ. of Kansas ..... Lawrence.
H. P. Cady, 1904, Univ. of Kansas ..... Lawrence.
M. E. Canty, 1903 ..... Buffalo.
Charles I. Corp, 1905, Univ. of Kansas ..... Lawrence.
Ewing N. Collett, 1903, Indian Univ ..... Bacone, I. T.
Rev. John T. Copley, 1903 ..... Clinton.
R. W. Coppedge, 1905, teacher high school ..... Topeka.
E. G. Corwine, 1905 ..... Mulvane.
W. R. Crane, 1904, Univ. of Kansas ..... Lawrence.
Ralph K. Crawford, 1904, Univ. of Kansas ..... Lawrence.
F. F. Crevecœur, 1899 ..... Onaga.
Robert W. Curtis, Ph. D., 1902, Univ. of Kansas .... Lawrence.
F. B. Dains, Ph. D., 1902, Washburn Coll ..... Topeka.
Emil O. Deere, 1905, Bethany Coll ..... Lindsborg.
S. D. Dice, 1904 ..... Alma.
James Dickson, 1904, Univ. of Kansas ..... Lawrence.
Robert K. Duncan, 1906, Univ. of Kansas ..... Lawrence.
R. B. Dunlevy, B. S., 1896, Southwest Kan. Coll..... Winfield.
E. X. H. Dunmire, 1905, Univ. of Kansas ..... Lawrence.
Harry Eagle, 1905 ..... Topeka.
H. W. Emerson, 1904, Univ. of Kansas ..... Lawrence.
B. F. Eyer, B. S., 1894, Kansas Agr. Coll ..... Manhattan.
T. L. Eyerly, 1906 ..... Canadian, Tex.
W. F. Faragher, 1904, Univ. of Kansas ..... Lawrence.
Thomas B. Ford, 1905, Univ. of Kansas ..... Lawrence.
Lillian E. Fowler, 1905, teacher high school ..... Ottawa.
A. O. Garrett, 1901, teacher high school ..... Salt Lake City, Utah.
Frank Gephart, 1906, Univ. of Kansas ..... Lawrence.
Brice E. Hammers, 1904, chemist ..... Topeka.
Dr. Eva Harding, 1904 ..... Topeka.
H. J. Harnly, B. S., 1903, McPherson Coll ..... McPherson.
W. A. Harshbarger, B. S., 1900, Washburn Coll..... Topeka.
Frank Hartman, 1905 ..... Kansas City, Kan.

ANNUAL MEMBERS.

L. D. Havenhill, 1904, Univ. of Kansas ..... Lawrence.
Dr. Francis C. Herr, 1905 ..... Ottawa.
W. C. Hoad, 1904, Univ. of Kansas ..... Lawrence.
Gertrude E. Hole, 1906 ..... Manhattan.
George J. Hood, 1904, Univ. of Kansas ..... Lawrence.
H. A. Horton, 1906 ..... McPherson.
W. F. Hoyt, A. M., 1902, Wesleyan Univ. ..... Salina.
L. C. Hodson, 1905, Univ. of Kansas ..... Lawrence.
B. C. Hubbell, 1905 ..... Concordia.
Albert K. Hubbard, 1904, Univ. of Kansas. ..... Lawrence.
Thomas M. Iden, 1897, State Norm. Sch ..... Emporia.
F. B. Isely, B. S., 1902, teacher high school ..... Wichita.
John J. Jewett, 1902. ..... Sawtelle, Cal.
A. W. Jones, B. S., 1894, Wesleyan Univ. ..... Salina.
George F. Kay, 1904, Univ. of Kansas ..... Lawrence.
W. H. Keller, 1898, teacher high school. ..... Effingham.
Leslie A. Kenoyer, 1906 ..... Independence.
Harry L. Kent, 1904, State Norm. Sch. ..... Hays.
John H. Klopfer, 1904 ..... Topeka.
Pierce Larkin, 1902, high school ..... Helena, Okla.
B. E. Lewis, 1904, teacher city schools ..... Eureka.
M. A. Low, 1906, attorney. ..... Topeka.
C. H. Lyon, 1900, teacher high school. ..... Emporia.
Hester E. Loveall, 1904, manual tr. sch. ..... Kansas City, Mo.
H. T. Martin, 1902, Univ. of Kansas. ..... Lawrence.
R. Matthews, D. D. S., 1898. ..... Wichita.
C. E. McClung, 1903, Univ. of Kansas ..... Lawrence.
D. F. McFarland, 1903, Univ. of Kansas ..... Lawrence.
J. M. McWharf, M. D., 1902 ..... Ottawa.
W. G. Medcraft, 1904, Wesleyan Univ ..... Salina.
Grace R. Meeker, 1899 ..... Ottawa.
C. F. Menninger, M. D., 1903. ..... Topeka.
H. L. Miller, 1904, high school. ..... Topeka.
W. L. Moodie, 1906, Univ. of Kansas ..... Lawrence.
Travis Morse, 1903 ..... Iola.
J. H. Newby, 1899 ..... Osage City.
N. P. Nielsen, 1906, architect. ..... Topeka.
A. M. Nissen, A. M., 1888, teacher high school ..... Wetmore.
Henry N. Olson, 1905, Bethany Coll. ..... Lindsborg.
Frank Patrick, 1903 ..... Topeka.
Leslie F. Paull, 1903, manual tr. sch. ..... Kansas City, Mo.
L. M. Peace, 1904, Univ. of Kansas ..... Lawrence.
Arthur D. Pitcher, 1906, Univ. of Kansas ..... Lawrence.
Norman Plass, D. D., 1902, president Washburn Coll.. Topeka.
M. A. Pond, 1906, teacher ..... Topeka.
L. M. Powell, M. D., 1906 ..... Topeka.
Charles H. Popenoe, 1903, Kansas Agr. Coll. ..... Manhattan.
C. S. Prosser, M. S., 1892, Ohio State Univ. ..... Columbus, Ohio.
W. S. Prout, 1904 ..... Topeka.

ANNUAL MEMBERS.

Albert B. Reagan, 1904, Indian School..... Mora, Wash.
W. F. Rice, 1902..... Gordon.
W. B. Robertson, 1905, Univ. of Kansas..... Lawrence.
A. P. Ruediger, 1905..... Lawrence.
W. G. Russell, 1905..... Russell.
D. C. Schaffner, 1903, Coll. of Emporia..... Emporia.
J. H. Schaffner, A. M., M. S., 1902, Univ. of Ohio.... Columbus, Ohio.
Theo. H. Scheffer, 1903..... Emporia.
Eva Schley, 1903, teacher high school..... Topeka.
Aaron Schuyler, 1904, Wesleyan Univ..... Salina.
C. H. Shattuck, 1899, Washburn Coll..... Topeka.
Roscoe H. Shaw, 1904, Univ. of Missouri..... Columbia, Mo.
Miriam Sheldon, 1906, Bethany Coll..... Topeka.
E. T. Shelley, M. D., 1902..... Atchison.
Claude J. Shirk, 1905, McPherson Coll..... McPherson.
J. A. G. Shirk, 1904, Ottawa Univ..... Ottawa.
Paul L. Shuey, 1905, Univ. of Kansas..... Lawrence.
Ralph C. Shuey, 1905, Univ. of Kansas..... Lawrence.
Eugene G. Smyth, 1901, Univ. of Chicago..... Chicago, Ill.
Mrs. Lumina R. Smyth, M. S., 1902..... Topeka.
W. N. Speckman, Ph. D., 1903, Wesleyan Univ. ..... Salina.
William O. Starin, 1906, Univ. of Kansas..... Lawrence.
B. T. Stauber, D. D., 1903..... Salina.
S. G. Stewart, M. D., 1904..... Topeka.
Chas. M. Sterling, 1904, Univ. of Kansas..... Lawrence.
Chas. H. Sternberg, 1895, explorer and collector..... Lawrence.
Teresa Stevenson, 1901..... Ottawa.
E. F. Stimpson, 1904, Univ. of Kansas..... Lawrence.
A. J. Stout, 1904, teacher high school..... Topeka.
Frank Strong, Ph. D., 1905, chancellor Kansas Univ., Lawrence.
Olin Templin, 1904, Univ. of Kansas..... Lawrence.
F. J. Titt, B. S., 1898, Kingfisher Coll..... Kingfisher, Okla.
E. S. Tucker, 1904, Univ. of Kansas..... Lawrence.
J. D. Walters, M. S., 1894, Kansas Agr. Coll..... Manhattan.
C. D. Weaver, M. D., 1902..... McPherson.
Ella Weeks, 1903, Kansas Agr. Coll..... Manhattan.
J. E. Welin, 1899, Bethany Coll..... Lindsborg.
Archie J. Werth, 1906, Univ. of Kansas..... Lawrence.
C. H. Withington, 1903, Kansas Agr. Coll..... Manhattan.
H. I. Woods, M. S., 1902, Washburn Coll..... Topeka.
L. C. Wooster, Ph. D., 1897, State Norm. Sch..... Emporia.
J. A. Yates, M. S., 1897, Ottawa Univ..... Ottawa.

Total number of members, January 1, 1907, 173.

PRESIDENT'S ADDRESS.

"RECENT GROWTH OF ENGINEERING COLLEGES."

By F. O. MARVIN, Dean of the School of Engineering, University of Kansas.

II.

CHEMICAL AND PHYSICAL PAPERS.

"COFFEE AND ESTIMATION OF ITS VALUE."
By L. E. SAYRE, University of Kansas, Lawrence.

"THE RELATION OF THE NEW FOOD AND DRUG LAW TO THE OFFICIAL PREPARATIONS."
By L. D. HAVENHILL, University of Kansas, Lawrence.

"DRUG STANDARDS WITH REFERENCE TO THE PURE FOOD AND DRUG LAW."
By L. E. SAYRE, University of Kansas, Lawrence.

"A MOST WONDERFUL TOOL."
By JOHN H. KLOPFER, Topeka.

"THE MODULUS OF LUNAR INFLUENCE—NOT IN A LIFTING, BUT IN A FALLING MOVEMENT."
By JOHN J. JEWETT, Sawtelle, Cal.

"THE SPECTRUM AND SPECTRUM SCALES."
By J. T. LOVEWELL, Topeka,

"THE QUANTITATIVE ESTIMATION OF IRON AND COBALT BY THE ROTATING CATHODE."
By R. W. CURTIS and S. A. MCREYNOLDS.

"NOTES ON KANSAS ROAD METAL."
By F. O. MARVIN, University of Kansas.

"THE DEVELOPMENT OF FOREST BELTS IN THE NORTHWESTERN PART OF CLAY COUNTY, KANSAS."
By JOHN H. SCHAFFNER, Columbus, Ohio.

"HELIUM IN NATURAL GAS."
By H. P. CADY and D. F. MCFARLAND, Lawrence.

"A NOTE ON THE DETECTION OF CYANIDES."
By H. P. CADY, University of Kansas.

"NOTE ON MERCUROUS SULFATE FOR STANDARD CELLS."
By H. P. CADY, University of Kansas, Lawrence.

"A PROPOSED TEST FOR BLEACHED FLOUR."
By J. T. WILLARD, Agricultural College, Manhattan.

"ON SOME FERROCYANIDES OF CALCIUM, BARIUM, AND MAGNESIUM."
By F. B. DAINS, Topeka.

"DETERMINATION AND COMPARISON OF SOUND INTENSITIES."
By BRUCE V. HILL, Lawrence,

III.

GEOLOGICAL PAPERS.

"SOME GEOLOGICAL STUDIES ON NORTHWESTERN WASHINGTON AND THE ADJACENT BRITISH TERRITORY."

By ALBERT B. REAGAN, Mora, Wash.

"SOME ANIMALS DISCOVERED IN THE FOSSIL BEDS OF KANSAS."

By CHARLES H. STERNBERG, Lawrence, Kan.

IV.

BIOLOGICAL PAPERS.

"LIST OF SPECIES OF HYMENOPTERA COLLECTED BY THE UNIVERSITY OF KANSAS ENTOMOLOGICAL EXPEDITIONS OF 1902, 1903, 1904, 1905, AND 1906."

By F. H. SNOW, University of Kansas, Lawrence.

"RESULTS OF THE ENTOMOLOGICAL COLLECTING EXPEDITION OF THE UNIVERSITY OF KANSAS TO PIMA COUNTY, ARIZONA, IN JUNE AND JULY, 1906."

By F. H. SNOW, University of Kansas, Lawrence.

"LIST OF SPECIES OF COLEOPTERA COLLECTED IN NEW MEXICO BY THE ENTOMOLOGICAL EXPEDITIONS OF THE UNIVERSITY OF KANSAS."

By F. H. SNOW, University of Kansas, Lawrence.

"CONTRIBUTIONS TOWARDS A CATALOGUE OF INSECTS OF KANSAS, RESULTING FROM PERSONAL COLLECTING."

By ELBERT S. TUCKER, University of Kansas, Lawrence.

"NOTICE OF SOME NEW ELEMENTS IN UINTACRINUS."

By H. T. MARTIN, University of Kansas, Lawrence.

"ADDITIONS TO THE LIST OF KANSAS BIRDS."

By F. H. SNOW, University of Kansas, Lawrence.

"SOILS AND BACTERIA."

By L. C. WOOSTER, State Normal School, Emporia.

"NOTES ON THE KANSAS BIRD LIST."

By D. E. LANTZ, Washington, D. C.

"ADDITIONS AND CORRECTIONS TO THE LIST OF KANSAS MAMMALS."

By D. E. LANTZ, Washington, D. C.

"IS THE GILA MONSTER A VENOMOUS REPTILE?"

By F. H. SNOW, University of Kansas, Lawrence.

"NOTES ON THE BIRDS IN THE BABOQUIVARI MOUNTAINS DURING THE MONTHS OF JUNE AND JULY."

By L. A. ADAMS, University of Kansas, Lawrence.

"FOOD HABITS OF KANSAS LIZARDS AND BATRACHIANS."

By F. A. HARTMAN, Wichita.

"CERTAIN CONDITIONS TO BE MET BY INSECT COLLECTORS."

By ELBERT S. TUCKER, University of Kansas, Lawrence.

"ADDITIONS TO THE LIST OF KANSAS COLEOPTERA FOR 1906."

By W. KNAUS, McPherson.

V.

MISCELLANEOUS PAPERS.

"NOISE: ITS RELATION TO HEALTH, DISEASE, AND LONGEVITY."
By J. M. MCWHARF, M. D., Ottawa.

"DANCES OF THE JEMEZ PUEBLO INDIANS."
By ALBERT B. REAGAN, Mora, Wash.

"CLIMATOLOGY OF KANSAS."
By T. B. JENNINGS, Weather Bureau, Topeka.

"NATURE PHOTOGRAPHY IN KANSAS—WORK OF MR. AND MISS MCCOLM."
By GRACE R. MEEKER, Ottawa.

"GAGING OF SEWAGE FLOW AT LAWRENCE, KAN."
By PROF. W. C. HOAD and A. H. MANN, University of Kansas.

"THE ACCURACY OF A MODERN BALANCE AND SET OF WEIGHTS."
By H. I. WOODS and ALICE K. MCFARLAND.

"CHANGE IN THE CLIMATE OF KANSAS."
By F. H. SNOW, University of Kansas, Lawrence.

VI.

APPENDIX.

ACCESSIONS TO THE ACADEMY LIBRARY, 1905 AND 1906.
ADVERTISEMENT OF VOLUMES ISSUED BY THE ACADEMY.
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